The Clinical Causes of Cancer of the Breast and its Prevention

With
Analyses of a Hundred Cases

BY

CECIL H. LEAF M.A., M.B. (CANTAB.) F.R.C.S. (ENG.)

Assistant Surgeon to the Cancer Hospital and The Gordon Hospital for Rectal Diseases

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Preface

THIS work is an inquiry into the Clinical Causes of Cancer of the Breast, and is the outcome of more than three years' study.

I have carefully taken and analysed the histories of a hundred cases, and in the hope of being able to form some sound conclusions regarding the causes of Cancer in this region, i.e. conclusions which shall be justified by facts, I have made special inquiries into the following points: (1) Age; (2) State—Single or Married; (3) Family History—especially of Cancer and Consumption; (4) Menstruation; (5) Confinements—number of, rapidity with which they follow each other; Labour; Lactation—presence or absence of—duration of—manner in which it has been performed—use of applications; (6) Previous diseases of the breasts; (7) Injury; (8) Corsets—comfortable or otherwise; (9) Worry and anxiety; (10) Residences—situation of, near a river—whether dry or damp; Climate—Drainage; (11) Diet—consumption of meat—Australian meat, fish, salt. Uncooked vegetables, etc.; (12) Alcohol; (13) Miscellaneous, General Health, Occupation, Possibility of Infection, Cancer Houses, etc.

This work is thus essentially a record of facts, upon which all the conclusions are based. All the cases have been admitted into the Cancer Hospital under my own care or that of my colleagues, to whom I tender my most sincere thanks for so readily placing all their available material at my disposal.

I have also much pleasure in acknowledging my indebtedness to Dr. Henry W. Syers, for kindly overlooking the proof-sheets, and for many valuable suggestions.

75, *Wimpole Street.* CECIL H. LEAF.

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Introductory

BEFORE dealing with the special subject of this work, we propose making a few remarks on the general subject of the aetiology of Cancer.

At the onset we would ask our readers to accept what we shall later on prove, viz., *that not only one, but many clinical causes of Cancer exist.* (We here use the word "Cancer" in a broad sense, and include in it both the epitheliomata and the carcinomata.) It is the non-recognition of this fact which has hitherto confined our inquiries to more or less stereotyped lines, and limited our conceptions of its aetiology to a most harmful degree. Further, it must be admitted that some of our medical literature has fostered this idea by writing about *the* cause of Cancer. And what is the result? The public are now impatiently awaiting the discovery of this single cause which is to explain the origin of Cancer throughout the body. A few moments' reflection will, we think, convince us that such a view is not only irrational but is one which all the facts at present at our disposal tend to entirely disprove. *A priori,* we surely are not right in expecting one single cause to exist which is capable of explaining the origin of Cancer throughout the body, seeing that the different parts of the body are exposed to the most diverse kinds of influences. Let us take two regions where Cancer is common—the tongue and the cervix of the uterus for example. Few would deny that syphilis, spirit drinking and smoking are, to say the least, powerful factors in producing Cancer in the former region, whereas they are not regarded as bearing any relation to the origin of the growth in the latter locality. Again, an organ such as the breast is subject to morbid influences very different to those of an organ like the stomach. The former occupies a prominent position, and is naturally more exposed to injuries than the latter, and we shall see later on that in so large a percentage of cases of Cancer of the breast there is a definite history of injury, that we are compelled to admit this as being a common cause of Cancer in this region. In the case of the stomach, however, such a history is usually wanting; hence Traumatism cannot in this case be regarded as a common cause of Cancer. On the other hand, we should naturally expect that irritating articles of food, or an unsuitable diet, would play a more prominent part in determining the onset of Cancer in the stomach than in the breast or indeed in any other organ not connected with the digestive tract. Again, the manner in which lactation has been performed, the wearing of badly fitting corsets, etc., etc., are questions which must be carefully inquired into when dealing with Cancer of the breast, but which may be obviously omitted when studying Cancer in other regions.

Clinically we know that Cancer may follow many different kinds of injury and irritation: soot and paraffin for example. Mr. Jonathan Hutchinson has called attention to the fact that arsenic may also be a factor. We have had under our care: (*a*) a man who had an extensive epithelioma in the right thigh, which developed as a result of an accidental burn, caused by the upsetting of some methylated spirit and whiteheart varnish (composed of shellac, resin and gum), which caught fire; (*b*) a man who had an epithelioma of the thumb, which developed as a result of his constantly working with sand and horse dung; (*c*) a woman with a large epithelioma of the labia, caused by prolonged pressure of the child's head during one of her confinements; (*d*) a woman who had a Cancer of the cardiac end of the stomach, caused by her swallowing a set of false teeth many years ago. We know too that an epithelioma may result from exposure to the X rays. Recently, Mr. Ernest Neve,[1] F.R.C.S., Surgeon to the Kashmir Mission Hospital, has called attention to the influence of heat in producing what is known as Kangri-burn Cancer of the thigh and abdomen. He says, "The cause of this is not far to seek. During the severe winters, and indeed for a great part of the year, every Kashmiri man, woman or child carries a portable charcoal brazier under the loose gown which constitutes his or her only garment. When walking, this hangs against the abdomen, when seated it is placed on the ground between the thighs. Slight burns frequently occur, and in very many people there is mottling of the skin in the exposed parts. The frequency of epithelioma may be judged by the fact that twenty cases of this kind were operated upon during June and July only." Mr. Neve was kind enough to send us several specimens of these growths, which were examined by Mr. Plimmer and Dr. Paine, of the Lister Institute of Preventive Medicine, who found them, as Mr. Neve had done, to be genuine, squamous celled epitheliomata. Many more cases, showing how various forms of irritation and injury can produce Cancer might be quoted. But it is argued, these different kinds of irritation and injury only act as predisposing causes, the essential cause is the entrance of a micro-organism, the life history of which once known, the cause of Cancer is known. In support of this theory it is urged that certain cell inclusions, found in cases of carcinoma, are parasitic in nature; and Mr. Plimmer states that out of 1278 fresh malignant tumours he examined he has found them in 1138 cases. We do not intend here to discuss the much-vexed question of the parasitic origin of Cancer; indeed there are many arguments which may be adduced in favour of it, and many against it, but we maintain that in the present state of our knowledge, we have no right to regard an organism, the very existence of which is to some extent hypothetical, as *the* sole cause of Cancer.

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[1] *Indian Median Gazette*, Vol. xxxv. No. 3, March, 1900.

Moreover, and this is the special point on which we would lay stress, even if we accept the parasitic origin of Cancer, we must remember that in studying its aetiology there is another factor of equal, and to our minds infinitely greater importance to be taken into account, viz., the resisting power of the tissues: it is this factor which determines whether a given micro-organism will live or die. In a most interesting address delivered at St. George's Hospital, entitled the "Seed and the Soil," and reported in the *Lancet*, May 10, 1902, Dr. W. Howship Dickinson calls attention to this point. He says: "In grasping the new pathology of microbes and bacilli, let us not quite ignore the ascertained facts of old time with regard to heredity, tissue, and diathesis." When discussing the distribution of plants within the vegetable kingdom he remarks: "But the seed may be indiscriminately and widely spread, within certain wide boundaries it may often be said to be ubiquitous, so that the whole question of distribution turns not upon the seed, but upon the soil; not upon the germ, but its reception." In dealing with the predisposing causes of tuberculosis or phthisis he says later on: "The predisposing causes may be more important than the exciting cause. In urban communities the microbe is always with us, it needs the antecedent suitability to be effective." . . . "The seed will fructify where it is satisfied with its entertainment, and perish where it is not." These remarks upon the soil apply with just as much, and perhaps even greater force, in the case of Cancer. Surely we have just as much right to regard the factors which depress or weaken the tissues as causes of Cancer as the entrance of a micro-organism, the very existence of which is at the present time doubtful. In any case, whether we admit the parasitic origin of Cancer or not, a careful consideration of the above facts will, we think, convince us of the urgent necessity of carefully studying all those conditions which, by lessening the resisting power, or depressing the vitality of soil of the body, may be sufficient of themselves, and quite independently of the entrance of micro-organisms, to determine the onset of Cancer. In the light of our present knowledge, we have every right to look upon such conditions as causes;

and as we know there are many such conditions, we are logically bound to admit that from a clinical point of view, at any rate, there are many causes of Cancer.

Seeing, therefore, that the soil in different parts of the body is subject to many kinds of influences, which vary according to the situation, it follows that if the aetiology of Cancer is to be scientifically determined, *each region of the body where Cancer develops must be studied separately* —each region must have its own special chart of inquiries, and we must be prepared to find that the causes producing Cancer in the one region are not necessarily identical with those producing it in the others. The sooner this fundamental fact is recognized, the sooner will the scales of hazy misconception and obsolete ideas fall from our eyes, and we shall then realize how limited is the view which would assign all cases of Cancer to a single cause.

A reference to the Bibliography at the end of this chapter will show some of the more important theories which have from time to time been put forward to account for the origin of Cancer. The results and conclusions arrived at by several of the authors there mentioned will be discussed and compared with our own. As will be seen, Haviland comes to the conclusion that Cancer is caused by residence in clayey districts, where the rivers are constantly overflowing their banks, and Lloyd Jones, that it is specially prevalent in densely wooded districts. Numerous maps and statistics have been drawn up, showing that Cancer is more prevalent in some localities than others; and attempts have been made to prove that the cause is due to some peculiarity in the soil, climate or district. Again, residence in certain particular houses, spoken of as "Cancer Houses," is held by some to account for a certain number of cases. We have no hesitation in saying that such general conclusions cannot be accepted, and for two reasons. In the first place, because in a great many of the statistics hitherto drawn up, the various kinds of Cancer are grouped together and are not specified; and in the second place, because other possible and perhaps more probable causes are entirely left out of consideration.

As to the necessity of keeping our minds open to the possibility of there being several causes of Cancer, even in an individual case, we can best illustrate our meaning by a reference to case No. 32. This is an instance of a married woman, aged fifty, who has Cancer of the left breast. There is a strong family history of Cancer, the patient's mother, sister and brother all dying from it. There is a history of severe injury to the left breast, shortly before the growth made its appearance. There is also a history of residence for twenty-eight years in a house that was constantly being flooded from the river. The patient, moreover, nursed her mother and sister, both of whom, as mentioned above, died of Cancer. To which of these are we to assign the cause of Cancer in this case? According to our particular bias we might attribute it either to (1) an hereditary tendency, (2) to the injury, (3) to residence in a damp house, or (4) to a possible infection. But clearly we have no right to select one of these factors, and call it *the* cause and neglect the others. Yet, in the laborious compilation of statistics, erroneous conclusions of this sort have been formed, simply because the subject has been attacked with reference to one particular theory, or from one single point of view.

Turning away now from the consideration of the aetiology of Cancer in general to the special subject of *The Clinical Causes of Cancer of the Breast*, in this work the Histories and Abstracts which will shortly appear in another Part will be found to contain the results of the inquiries into the special points mentioned above, as well as other events capable of throwing light on the aetiology. Each point investigated is under a special heading, such as *Injury*, *Previous Diseases of the Breasts*, *Worry and Anxiety*, etc., and there is also a special heading called *History of Onset*. Where the *History of Onset* gives no clue as to a possible cause, it is either omitted altogether, or if found it would come more appropriately under some other heading such as *Injury*, it is included there. We have omitted as far as possible all details which did not appear likely to throw any light on the aetiology. We have therefore limited our description of the operation performed to the smallest limits, and have only described the growth in the breast, or the recurrences as the case might be, in sufficient detail to show that the case was a genuine one of Cancer. Under the heading of *Lactation* are included diseases such as abscesses, sore nipples, etc., which appear at or shortly after the suckling period. Other diseases of the breast, not connected with Lactation, such as abscess, Paget's disease, depressed nipples, etc., are included under the heading—*Previous Diseases of the Breasts.*

As there have been so many theories recently put forward, attempting to refer the origin of Cancer to damp surroundings, either in the soil, climate, or houses, we have directed our inquiries into those channels which we thought would elicit most trustworthy information on these points. As a rule we have found patients were quite ignorant of the nature of the soil on which they had lived, and whether their houses were situated on high or low ground. We have, therefore, except in the case of the more intelligent patients, been obliged to omit these points from the histories, as the information given could not be relied upon. On the other hand, the various places in which they have lived, whether their houses were damp or dry, whether situated near a river, or canal, etc., have usually been remembered with quite sufficient accuracy to make the information given valuable.

In recording the answers, we have thought it desirable as far as possible to write down the patient's own words. In each history the more important points are printed in italics.

We may mention that in every case (except in a few where the disease was too far advanced for operation, or where a pathological report was not obtainable, but where no doubt could be entertained as to the nature of the growth) a microscopical examination has been made, and the diagnosis of Cancer confirmed. Consequently, all the 100 cases mentioned in this work are genuine cases of Cancer.

In the abstracts, the chief facts are arranged in a tabular form, so that the more important points in each history may be seen at a glance.

In each history and abstract is a special heading called *Probable Causes,* under which are included those antecedent events which the facts of the case seemed to show could not legitimately be excluded. Where doubt was felt as to whether a given antecedent event ought to be included under this heading, this is indicated by a query. In forming an opinion as to what should be, and what should not be regarded as a probable cause, we have endeavoured to be guided solely by the facts of each case. Whether our conclusions are accepted or not, is a matter of comparative indifference. Our main object throughout has been to state the facts upon which those conclusions are based, rather than our own views concerning them.

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Dr. Bennet, in 1849, wrote "Instances are common where individuals have tubercles in youth, and Cancer in adult age."

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Results and Conclusions

IN this part the results found and the conclusions formed are first stated, and then discussed and compared with those of some of the authors mentioned in the preceding Bibliography.

In 96 *per cent. of the cases one or more definite causes were found to account for the growth. Of this number more than one cause was present in* 90 *cases.* In only 4 per cent. of the cases, therefore, was the cause of the growth doubtful.

Age.

As far as it has been possible to estimate, the average age at which carcinoma of the breast commences is 49 years and 2 months. The extreme limits of age at which it appeared were found in this series to be 28 and 71 respectively.

Singled or Married.

84 per cent. were married, 16 per cent. unmarried. *Cancer of the Breast therefore appears more than five times as frequently in the married as in the unmarried.* This large proportion is probably due to the greater number of what the Germans call "insults," irritations and injuries to which the breasts of married women are exposed than is the case with unmarried women. This subject will, however, be more fully dealt with under the headings of "Confinements and Lactation," and "Injury," etc. In 4 of the 84 cases, marriage took place early, viz., at 16½, 17½, 17 and 15 years of age respectively. In all these cases except the last the first confinement took place within a year of marriage—in the last case it took place 3½ years afterwards. It is probable that early pregnancies occurring in such young girls may, by stimulating the mammæ before they are properly developed, prepare the way for the subsequent development of Cancer.

Family History.

In 39 *per cent. there was a definite history of consumption in some member or members of the family.*

In 23 *per cent. there was a definite history of Cancer in some member or members of the family.* Of this number, in 9 cases, and probably in 13, a family history of Cancer was combined with that of Consumption. As we have only included those cases in which the evidence as to there being Consumption or Cancer was very strong, and have rejected all cases which could admit of reasonable doubt, it is probable that both these percentages should be somewhat higher.

In about 53 *per cent. of cases, therefore, there is a family history either of Consumption or Cancer.*

In 27 per cent. of cases the family history was good.

In 3 per cent. of cases the family history was fair.

In 6 per cent. of cases there was a definite history of some weakness on the part of the mother. In a few more cases a definite weakness on the part of the father or mother was found associated with a family history of Consumption or Cancer.

In 3 per cent. of cases there was a definite history of intemperance in some member or members of the family. In one case (not included in the 3 per cent.) a history of intemperance in the case of the grandfather and father, and weakness on the part of the mother, was associated with a family history of Consumption.

For full details of the family history, the reader is referred to the Histories and Abstracts in Part II.

Therefore, in 62 per cent. of cases of Cancer of the breast, the family history is bad in some respect or other.

With these figures it is interesting to compare those collected by Roger Williams—*Diseases of the Breast with special reference to Cancer*, page 260 to 278. This author found—

A family history of Consumption in 55 per cent. of his cases of mammary Cancer.

A family history of Cancer in 24·7 per cent. of his cases of mammary Cancer.

A family history of Consumption *and* Cancer in 13·4 per cent. of his cases of mammary Cancer.

Dealing first of all with the question of a family history of Consumption, it is evident that before we can draw any sound deductions, we must know the frequency with which a family history of tubercle is found amongst the general community. This is variously given by different authors. W. Soltau Fenwick, *Cancer and other Diseases of the Stomach,* writes that, "Among the general community a family history of tubercle exists from 10·8 (Dovey), to 28·5 per cent. (Kuthy)." Taking 19 per cent. as the mean between these two, it is evident from the figures already given that the frequency with which a family history of Consumption is found is markedly increased in cases of Cancer of the breast. Holden, writing as far back as 1868, said: "If it can be shown that the offspring of tuberculous parentage is more liable to Cancer, as we know it is to tubercle, all our microscopical and clinical observations amount to nothing; the fact of identity of essence becomes established, whatever may be the modification of such essence undergone in process of transmission." This author concluded that tubercle and Cancer were in no way akin, and that a patient with a family history of tubercle was no more predisposed to Cancer than a patient who had not such a history. With this conclusion we cannot agree. In the first place, undoubted cases of the co-existence of tubercle and Cancer have been reported, *vide Bibliography,* Bristow, Croizet, L., and Gouin, A., and as a further instance we may mention Case No. 46. This was a patient whose aunt died from consumption. The patient was probaby infected with consumption from her husband, who had a fistula and had "always got a cough and is fetching up blood." The patient had her right breast removed for Cancer, and there were subsequent recurrences. Over her left elbow was a partially healed ulcer which was distinctly tubercular in appearance, and from which a thin serum could be squeezed. In this connexion we may also mention the case of a boy (aet. 23) under our care, who for eleven years had been afflicted with lupus. This had involved the upper lip, both cheeks, and had partially destroyed the alae of the nose on either side. Treatment by the X rays was commenced, but after the third application he developed a growth the size of a two-shilling piece in the centre of the upper lip. This grew so rapidly that it had to be removed with almost the whole of the upper lip. The growth was examined by Dr. Morgan, Pathologist to the Cancer Hospital, and proved to be a typical epithelioma.

We have little doubt that the cause of the epithelioma—which, occurring in so young a patient and situated in the upper lip, is very unusual—was the *irritation produced by the X rays in a tubercular subject.* A remarkable feature also was the manner in which the lupus decreased as the epithelioma grew. These and other cases which might be quoted are sufficient to show that Cancer and tubercle can coexist in the same person, though, as in the case just quoted, it is found that when the former makes its appearance, the activity of the latter usually subsides. In the second place, we have sometimes found that, in those who have a family history of tubercle, Cancer of the breast develops in an unusual manner—for instance, instead of commencing as a hard lump, as is usually the case, it may, perhaps, begin as a fluctuating swelling with some redness of the skin; the physical signs pointing at first more to abscess than to malignant growth; if the case can be watched, however, the signs of the latter, slowly but surely, become more apparent.

The main question we have to answer is,—Are patients with a family history of Consumption more liable than others to Cancer of the breast? To this we answer unreservedly, yes. That is, we consider injuries, errors of lactation and various kinds of irritation, which in healthy women may produce little or no harm are much more apt to produce Cancer in those in whom there is a family history of Consumption. In other words, in about 39 per cent. of cases, we regard the development of Cancer of the breast as to some extent the outward and visible manifestation of the tubercular tendency. This tendency to consumption need not, and does not always manifest itself in the development of tubercle : it may express itself in terms of Cancer especially when, as is so often the case, the breasts are exposed to the different kinds of " insults " to which we shall presently refer. In reference to this point, Roger Williams, op. cit. page 272, pointed out that a large proportion of Cancer patients are the surviving members of tubercular families. He also is of opinion " that no hereditary condition is more favourable to the development of Cancer than that which predisposes to and accompanies tubercle."

As we have already seen, in 23 per cent. of cases there is a family history of Cancer. Are we to regard this as proving that Cancer is hereditary in this percentage of cases ? That is—Are we to regard Cancer of the breast as a disease which is passed down as such ? We think not, and for the following reasons. In every single case in which there was a family history of Cancer, other factors were also present, which probably took some share in the production of the growth. Therefore we cannot regard a family history of Cancer as, *per se, a sufficient cause* of Cancer of the breast. That a certain tendency to cell proliferation may readily be passed down from one generation to another is, we think, extremely probable. On this point Roger Williams, op. cit. page 268, remarks :—" It will be gathered from the foregoing that what is transmitted in Cancer is not the disease itself, but a tendency or predisposition to the production of those conditions that may finally eventuate in it." Neve observed that many patients suffering from Kangri-burn Cancer had well-marked spots and plaques of pigmented and raised epithelium in various parts of their bodies, and epithelial horns were not uncommonly present, showing that there was a special proneness to cell proliferation.

In this connexion we must always remember, too, that even in those cases where there is a family history of Cancer, or where the mother herself has had Cancer of the breast, the mammary Cancer in the case of the daughter may have been due, not so much to her having any particular tendency to cell proliferation as to the fact that her breasts may be, and in all probability have been, exposed to some kind of injury or irritation, or that lactation has not been carried on in the proper way. This subject however, together with the question of infection with tubercle and Cancer, will be more fully dealt with later on. There would seem to be no evidence favouring the view that in those cases where a family history of consumption is combined with that of Cancer, the liability to the latter is in any way increased. Weakness on the part of the mother and a family history of intemperance, which latter was found in only four cases, must be regarded as contributory causes of Cancer of the breast, and more especially when combined with a family history of consumption.

In about 37 per cent. of cases we find nothing in the family history which throws any light on the origin of the Cancer.

Menstruation.

In 67 per cent., menstruation was normal.

In 26 per cent., the function took place at the regular intervals and lasted the usual time, but there was, more or less, severe pain at each monthly period.

In 7 per cent., menstruation was abnormal in one of the following ways :—

(*a*) In case No. 3, it did not commence until the age of twenty, and the intermenstrual periods varied from three weeks to two months.

(*b*) In case No. 11, the periods were always associated with much pain, and the intermenstrual periods varied between one month and three months.

(*c*) In case No. 34, the intermenstrual periods were unusually long, and varied from five weeks to nine months.

(*d*) In case No. 77, each period lasted fourteen days.

(*e*) In case No. 83, the periods were associated with sickness.

(*f*) In case No. 98, menstruation did not commence until the age of nineteen. Each period lasted seven days, and was associated with much pain.

(*g*) In case No. 100, menstruation did not commence until the age of twenty-six. Each period lasted five days.

Out of eighty-five cases we found that—

The growth commmenced before the cessation of menstruation in 37.

The growth commenced after the cessation of menstruation in 45.

The growth commenced about the same time as the cessation of menstruation in 3.

These figures agree closely with those of Roger Williams, op. cit. p. 244, who found that out of eighty-seven women with mammary Cancer the disease was first noticed :—

Before menstruation ceased, in 35 cases.

After menstruation ceased, in 42 cases.

At about the time of the menopause, in 10 cases.

The average time for the cessation of menstruation was found to be forty-seven years and seven months, and seeing that the average age for Cancer of the breast to appear is forty-nine years and four months, it follows that the average time for the growth in the breast to appear is one year and ten months after the menopause.

These facts would appear to show that irregularities in the menstrual function and the time at which the menopause appears have little or no influence in the production of Cancer, though it may be remarked that patients themselves sometimes ascribe their Cancer to their courses having ceased or having continued too long, as the case may be.

Confinements.

In 42 per cent., the confinements were normal and there were no miscarriages.

In 15 per cent., the confinements were normal, but there were miscarriages.

In one case there were no confinements but two miscarriages.

In 16 per cent. there was some abnormality in connexion with one or more of the confinements.

In 26 per cent. there were no confinements ; as sixteen of these were unmarried, it follows that in 11 per cent. of the married no confinements took place.

Out of the forty-two cases where the confinements were normal, in six they followed each other rapidly, for instance :—

In case No. 18, the second, third and fourth confinements followed each other after an interval of one year and four months, and the fifth, one year and five-months after the fourth.

In case No. 40, four confinements followed each other at intervals of one year.

In case No. 43, nine confinements followed each other at regular intervals of two years.

In case No. 51, within the first nine years of married life, eight confinements took place.

In case No. 87, nine confinements followed each other at yearly intervals.

In case No. 88, out of twelve confinements ten followed each other at intervals varying from one year and nine months to one year and eleven months.

To what extent the occurrence of miscarriages, difficulties or abnormalities in connexion with labour in any way contribute to the formation of Cancer of the breast it is extremely difficult to determine, but it is reasonable to suppose that confinements following each other in rapid succession must exercise a deleterious effect upon the secretory cells of the mammæ, especially when combined with errors of lactation, to which subject we will now turn.

Lactation, Errors of.

With reference to lactation as a cause of Cancer of the breast, Walshe, *Nature and Treatment of Cancer*, 1846, wrote, "It is probable that women who suckle their offspring are less exposed to the risk of Cancer of the breast than are those who consign the duty to others. But although this is a matter of fair presumption, it requires to be numerically proved. The opposite practice, so common among the more indigent classes of the country, of protracting lactation to such an extent as to exhaust the energies of the mother, must inevitably promote permanent deterioration of her constitution; but whether it may have any special power in generating Cancer remains to be proved."

Roger Williams, op. cit. p. 288, remarks: "With regard to lactation, Gross's statistics show that of 416 breast Cancer patients, 316, or 76 per cent., had suckled; while 100, or 24 per cent., had not.

Of 110 cases tabulated by Velpeau, 60 had suckled, or 54·54 per cent., and 50, or 45·46 per cent., had not. Winiwarter analysed 102 cases with the result that 64 had suckled, or 63·8 per cent., and 37 had not, or 36·2 per cent.

These data afford no proof that suckling predisposes to cancer, and I am at a loss to find any justification for the assertion that the breasts of married women, and of those in whom the gland has become active, are more liable to cancer on this account than are the breasts of single and sterile women. Mammary cancer is a disease, not of the active breast, but of the breast becoming obsolete. Of 71 prolific women with mammary cancer, I have found that in no less than 55 (77·4 per cent.) the disease did not commence until after the child-bearing had ceased. Rarely does it arise during pregnancy or lactation."

Roger Williams concludes that these figures afford no proof that suckling predisposes to Cancer. With this conclusion we entirely agree, but in endeavouring to trace a relation between Cancer of the breast and lactation, the point for us to consider is, not whether the function has actually taken place or not, but whether it has been performed in a proper or improper manner. Under the heading of Lactation we have therefore subdivided the cases in which there have been "Errors" as follows: (*a*) Cases in which lactation has been unduly prolonged (any time over eight months being regarded as unduly long). (*b*) Cases in which for one reason or another there has been inability to suckle, or this function has been carried out for an insufficient length of time. (*c*) Cases in which these two conditions are combined. Believing that the various kinds of applications often used by women in the hope of removing milk from their breasts take some considerable share in producing Cancer of the breast, we have also considered the question of (*d*) Applications, under this heading.

(*a*) *There was over-lactation from one or both breasts on one or more than one occasion in fifty-one cases.* To give an approximate idea as to the length of time during which suckling was carried out, these cases may be tabulated as follows:—

In four out of these fifty-one cases, lactation extended on one or more than one occasion over a period of eighteen months or more.

In thirty-three out of these fifty-one cases, lactation extended on one or more than one occasion over a period between one year and eighteen months.

In fifteen out of these fifty-one cases, lactation extended on one or more than one occasion over a period varying between eight months and one year.

In one case—No. 87—it should be observed that though over-lactation took place on one side, the Cancer developed in the opposite side, i.e. the side from which in this particular instance, it so happened, no suckling had taken place at all.

In four cases—Nos. 25, 34, 68 and 84—the reverse was the case, the Cancer developing in that breast to which the child had been most frequently applied.

(*b*) *There was absence of or insufficient lactation on* *one or more than one occasion, from one or both breasts in fifty cases.*

Of this number

In eighteen cases, this was due to the fact of the child being born dead, or dying soon after its birth.

In five cases, it was caused by depressed nipples. In two of these cases, this condition was associated with Paget's disease.

In twenty-one cases, some complications arising during the period of lactation, such as abscess, sore or inflamed nipples, curtailed or entirely prevented suckling from one or both sides. Out of the ten cases in which an abscess was present, in seven the Cancer developed on the same side, and in three on the opposite side.

In the remaining cases, suckling was either not carried out at all, or curtailed for one of the following reasons. (*a*) The mother not wishing to be troubled with the process, or business engagements preventing it. (*b*) The mother becoming pregnant again. (*c*) Deficient secretion or poor quality of milk owing to the mother being in a weak state of health.

(*c*) Of the cases mentioned under *a* and *b* over-lactation was combined with under-lactation or absence of lactation in thirty instances. Thus out of a total of eighty-four women who were married and of seventy-three who had become pregnant, *in only two cases was suckling carried out in one or more of the confinements in a perfectly normal manner. There was some "error of lactation" in seventy-one per cent.*

To sum up.

Out of 100 cases of Cancer of the breast it was found that

Sixteen were unmarried.

Eleven were married but had never become pregnant.

Two had suckled normally.

Ten did not suckle at all, owing to some circumstance preventing it.

In one case there was deficient secretion of milk.

In twenty-two cases there was over-lactation on one or more than one occasion.

In eight cases there was under-lactation on one or more than one occasion.

In thirty cases over-lactation was combined with under-lactation, that is, the same patient had in some of her pregnancies suckled for too long, and in others for too short a period. *Such a large percentage shows, we think, conclusively that errors of lactation must, as suggested by Walshe, play an important part in producing Cancer of the breast.* There can be no doubt that over-suckling on the one hand, and the refusal to suckle on the other, or the presence of some physical disability which prevents the proper carrying out of the function, are responsible for a very considerable number of cases of Cancer of the breast. But such errors must not be regarded as sole causes, for a reference to the Histories and Abstracts will show that in nearly every instance other factors were present which must be allotted their due share in the production of the Cancer. At the end of this chapter we shall have occasion once again to point out that Cancer of the breast is almost invariably the result of, not one, but a combination of causes. As over-lactation is found in a rather larger number of cases than absence or deficiency of lactation, it is probable that the former takes a somewhat greater share in the production of Cancer than the latter. It is a very common practice for lactation to be prolonged for a year or eighteen months, or even two years, and this custom is often repeated in each succeeding confinement. It must be evident that such a constant and prolonged drain upon the system must permanently damage the secretory cells of the mamma, and thus prepare the way for the future development of Cancer.

The same result may be brought about by the opposite condition—deficiency or absence of lactation—but by a somewhat different process.

We are not now considering those cases where there is deficient secretion of milk, or where the milk is poor in quality, but only those where, though a proper amount is secreted, it cannot be got rid of in the natural way.

Now it is a well-known physiological law that for secretory cells to maintain a state of health, it is essential that the products of their secretory activity should be removed. But in the class of case we are now considering, this is rendered impossible owing to some circumstance such as the birth of a still-born child, or its death soon after birth, or owing to some physical disability on the part of the mother, such as depressed, sore or ulcerated nipples, etc., etc. The result is that, in a great many cases, retention of milk takes place to a greater or less extent. This retained milk, which must undergo a certain amount of chemical change, acts as an irritant to the secretory cells. An abscess frequently results, in the site of which, after a shorter or a longer interval, a Cancer may develop. But whether an actual abscess develops or not the final result may be the same, and as these histories show, in a great many cases the Cancer develops on that side from which there has been, on one or more occasions, great difficulty in, or an entire absence of, suckling. *Hence any circumstance which favours the retention of milk once duly secreted, should be regarded as a possible, and, other circumstances being favourable, as a probable cause of Cancer.* Over-suckling, retention of milk through non-suckling, the use of certain kinds of applications, which we are now about to consider, are all in the nature of "insults" to the delicate secretory cells of the mamma, which after a shorter or longer time may show their resentment by becoming cancerous. Roger Williams maintains that Cancer rarely orginates during pregnancy or lactation. On the other hand, we have little doubt that these "Insults" so frequently offered during the lactation period are often the *fons et origo* of the process, though it may not be until after the lapse of several years that the Cancer makes its appearance.

(*d*) *Use of Applications.*

At the time of weaning the child, or in case it dies at or soon after its birth, mothers are frequently in the habit of adopting, or are recommended to adopt, some treatment with the view of "drying up" the milk. This usually takes the form of rubbing in some kind of domestic preparation, either semi-solid or liquid. This we found had been done in 20 per cent. of cases. Of the various substances and liquids used we may mention the following: Brandy, oil and milk, linseed meal, camphorated oil and basilicon ointment, hartshorn oil, diachylon plaster and "green oil," vaseline and "goose oil," spruce, butter, brandy and sweet oil, brandy and salt, brandy and butter, bitter aloes, beeswax and honey. The following applications had also been made use of: hot water bottles, and rags steeped in gin. The rubbing in of such preparations and the adoption of such means to "dry up" the milk, must inevitably be a source of irritation to the mammary cells, and so contribute to the formation of Cancer.

Previous Diseases of the Breasts: Unconnnected with Lactation.

In 20 per cent. of the cases there was some previous trouble or disease of the breasts unconnected with lactation, of which the following is a brief summary:—

In Case No. 2, Paget's disease was present in the *Left* Breast.	The Cancer developed in the *Left* Breast.
In Case No. 4, during the summer months the *Left* nipple was cracked. Patient also had a blow on this Breast.	The Cancer developed in the *Left* Breast.
In Case No. 8, *both* nipples had always been drawn in since birth.	The Cancer developed in the Left Breast.

In Case No. 26, *both* nipples had been drawn in since girlhood.	The Cancer developed in the Right Breast.
In Case No. 34, both breasts were always extremely painful just prior to the menstrual periods.	The Cancer developed in the Right Breast and subsequently the left.
In Case No. 46, soreness was present in the *Right* Breast.	The Cancer developed in the *Right* Breast.
In Case No. 47, there was an abscess in the *Right* Breast.	The Cancer developed in the *Right* Breast.
In Case No. 48, the nipplies were sore on the Left but not on the Right side, but there was an abscess on the *Right* side in connexion with lactation.	The Cancer developed in the *Right* Breast.
In Case No. 50, there was an abscess in the *Left* Breast.	The Cancer developed in the *Left* Breast.
In Case No. 52, occasional sore nipples on both sides. Injury to Left side.	The Cancer developed in the Right Breast.
In Case No. 64, occasional sore nipples on both sides.	The Cancer developed in the Left Breast.
In Case No. 65, breasts always large, especially the *Right*.	The Cancer developed in the *Right* Breast.
In Case No. 68, Paget's disease of *Right* nipple. Nipple on left side always small and liable to crack.	The Cancer developed in the *Right* Breast.

In Case No. 75, Paget's disease of *Right* breast was preceded by split nipples on both sides.	The Cancer developed in the *Right* Breast.
In Case No. 81, Adenoma of *Right* breast.	The Cancer developed in the *Right* Breast.
In Case No. 82, there was acute stabbing pain in both breasts, and an Injury to the *Right* breast.	The Cancer developed in the *Right* Breast.
In Case No. 92, Adenoma in the Right breast. Some ulceration above the *Left* nipple.	The Cancer developed in the *Left* Breast.
In Case No. 93, both breasts always tender, especially during menstrual periods.	The Cancer developed in the Left Breast.
In Case No. 98, some kind of lump present in *Right* breast. Adenoma ?	The Cancer developed in the *Right* Breast.
In Case No. 100, abscess under the right arm. Inflammation of both nipples.	The Cancer developed in the *Right* Breast.

Roger Williams says, "It is often asserted that Cancers of the breast are due to antecedent attacks of inflammation of the affected part, *yet no conclusive evidence of this has ever been adduced.*" He found that 17·5 per cent. of cases of mammary Cancer gave a history of some previous disease of the breast—abscess in seventy-five, sore nipples in eight, and inflammation in seven; and in six of these cases the nipples were congenitally malformed, and in thirteen other cases, unassociated with any inflammatory lesion, the nipples were also congenitally malformed.

As showing that there is some relation between previous diseases and Cancer of the breast it must be observed that in twelve of the cases just mentioned the Cancer developed on the same side as the breast which had been previously affected or affected to the greatest extent.

In one of these cases, however—No. 4—it must be observed that an injury as well as a cracked nipple must be held partly accountable for the development of Cancer on the left side.

In two cases in which the Cancer developed on the opposite side, this was explained by the fact that in the first case (No. 48) there had been a previous abscess in connexion with lactation on that side, and in the other (No. 82), though there had been acute stabbing pain in both breasts, the Cancer developed in the right breast, because on that side there had been a previous injury. In six cases there seemed to be no particular reason why the Cancer developed more in the one side than the other. In Case No. 52 the nipples were occasionally sore on both sides, and there had been an injury to the left breast, and yet the Cancer developed in the right.

Of all the previous diseases of the breasts, unconnected with lactation, which seem most liable to cause Cancer, we would mention (1) Depressed or small nipples (found in four cases); sore, ulcerated or split nipples (found in seven cases), and Paget's disease (found in three cases).

Injury.

In thirty-five per cent. of cases there was a definite history of injury; and in thirty-two of these cases the Cancer developed on the same side as the injury. The length of time between the receipt of the injury and the first appearance of the growth varied between three weeks and thirty-one years; the average time was found to be three years and nine months. *In two cases, injury was the only cause to be found to account for the* *growth. In two more cases, a history of injury, together with residence in damp houses and districts were the only assignable causes.* In by far the majority of cases, the injury to the breast took the shape of a knock, either accidental or otherwise, with the closed fist or elbow, or a fall or a knock against some article of furniture, such as a chair, corner of a table or a ladder. Some of the injuries which occurred are of a curious nature, for instance :—

In Case No. 21, a large pear fell on to and injured the left breast.

In Case No. 22, the right breast was struck violently with a lawn tennis ball.

In Case No. 32, the left breast was injured shortly before the Cancer made its appearance by being violently struck with the edge of a large roll of oilcloth, which a shopman was handing down for inspection and which he let slip by accident.

In Case No. 49, during the suckling period, the child's feet constantly kicked against the right breast.

In Case No. 88, the patient, who was a midwife, was in the habit of allowing women during their labour pains to make counterpressure against her left breast so as to render them more effective.

The fact that in so many cases the Cancer developed on the same side as the injury, and almost invariably at the exact spot injured, shows without a doubt that we must regard Traumatism as a common factor in the production of Cancer of the breast. *But though injury is almost invariably found combined with other causes, yet we believe in a small number of cases it is capable of itself of originating the Cancer,* and as will be seen from the remarks just made, we attribute much more importance to Traumatism as a cause of Cancer of the breast than Roger Williams, who writes, "Though a blow, wound, or other injury may sometimes precipitate the formation of a Cancer, yet it appears to me from the foregoing considerations that such stimuli themselves are inadequate to originate the disease; the final outbreak in these cases is but the explosion of a long train of antecedent preparation."

In his *Clinical Lectures and Essays* Sir James Paget remarks, " In another, after it may be a period of apparent recovery, a painless swelling appears and increases, and at length is evidently cancerous."

Snow, on *Cancer and the Cancer Process*, page 31, in discussing Cancer generally says, " Carcinoma, taking that of the mamma as a type, arises in 11·5 per cent. of the cases from sudden and single acts of violence, leaving 88·5 per cent. to be otherwise accounted for." In Cancer of the breast, as we have just seen, the number of cases in which Traumatism occurs is much higher, and amounts to 35 per cent.

Corsets.

Snow, op. cit. p. 35, remarks : " There is little doubt that pressure by the universal corset, directly on the breasts and indirectly on the pelvic organs, materially contributes to prepare the soil for future Cancer in these regions." We have made very careful inquiries into this subject, and have found that in only seven cases was there any evidence to show that the corsets had exercised any undue pressure on the breasts.

These cases were, No. 29, where the corsets, which were made of whalebone, had exercised undue pressure against the Left Breast, the side in which the Cancer subsequently developed ;

No. 39, where the corsets had steel " bones," and were uncomfortable for three years, and pressed unduly against the waist, but whether against the breasts could not be determined ;

No. 49, where the corsets, which were made of whalebone, had for two years pressed against the right breast, in which the Cancer subsequently developed;

No. 52, where the corsets were left off periodically, presumably because they were uncomfortable ;

No. 59, where the corsets caused discomfort in the patient's right breast for nine months previous to her noticing the lump in that side;

No. 75, where the corsets, which were made of "jean and cords," were very uncomfortable;

No. 90, where the corsets caused discomfort for one year.

As a matter of fact, we have almost always found that women are most particular in seeing that their corsets are comfortable, and in immediately changing them if found not to be so. Nevertheless, corsets with "bones" of some kind—made either of whalebone, cane, or steel, are almost invariably worn, and these may, especially if the corsets are ill-fitting, cause undue pressure against the breasts. Therefore, while we think it is possible that the wearing of *unsuitable* corsets may take some share in producing Cancer of the breast, our inquiries show that such a cause is present in only a small percentage of cases. On the other hand, provided the corsets are well made and comfortable, as is usually the case, we are of opinion that they can exercise little or no influence in this direction.

Worry and Anxiety.

The part played by mental worry and anxiety in the production of Cancer of the breast has for many years been the subject of much difference of opinion. Sir James Paget, *Surgical Pathology*, 3rd edition, page 800, wrote: "The cases are so frequent in which deep anxiety, deferred hope and disappointment are quickly followed by the growth or increase of Cancer, that we can hardly doubt that mental depression is a weighty addition to the other influences that favour the development of the Cancerous Constitution. Nor is it strange that it should be so; it is consistent with the many other facts showing the affinity between Cancer and depressed nutrition."

Dr. Walshe, *On Cancer*, 1846, page 155, said: "Much has been written on the influence of mental misery, sudden reverses of fortune, and habitual gloominess of temper on the deposition of carcinomatous matter. . . . It would be vain to deny that facts of a very convincing character in respect of the agency of the mind in the production of the disease are frequently observed. . . . I have myself met with cases in which the connexion appeared so clear and decisive that to question its reality would have seemed a struggle against reason."

Snow, *op. cit.* page 35, remarks: "The conclusion is, that of all causes of the Cancer process in every shape, neurotic agencies are the most powerful. That, of such, distress of mind is the one most commonly met with."

Roger Williams doubts the correctness of these views, and remarks: "Some authors, following the example of Astley Cooper, have attached great importance to grief, anxiety and mental distress as causes of Cancer, and they have adduced statistics in support of their belief. I am unable to confirm this."

Now, in order to estimate the correctness or otherwise of these views we have to be extremely careful in making our inquiries; for instance, a great many women readily admit they have had an unusual amount of worry or mental distress of some kind, but when questioned more closely, it turns out that in a great many cases this came on after the appearance of the growth—in fact, the growth was the cause of the anxiety, and not the anxiety the cause of the growth. However, in 35 per cent. of cases there is a history of unusual worry and anxiety which was present *before* the Cancer appeared, and which it is quite possible took some share in its production.

Of these thirty-five cases, we found that—

In ten cases the mental misery was caused by brutal or unkind treatment from, or intemperance on the part of the husband.

In nine cases there was much anxiety or grief, caused by nursing a husband through a long illness, worry on account of his health or his death.

In sixteen cases the causes of the worry and anxiety were miscellaneous; the most usual being: (*a*) straitened circumstances; (*b*) worries in connexion with business; (*c*) death of one or more of the children; (*d*) harsh treatment from a relative ; (*e*) illness of and the necessity to support some relative; (*f*) several undetermined causes.

In sixty-five per cent. of cases, beyond the ordinary worries, such as we all experience in our daily life to a greater or less extent, there had been no undue mental anxiety or distress of any kind. Of this number six were what are usually described as "worriers." Exactly to what extent these facts justify us in ascribing mental grief or anxiety, etc., as causes of Cancer of the breast it is very difficult to determine, *but we probably shall not be far wrong in concluding that in about* 35 *per cent. of the cases, undue mental distress of some kind takes a share in the production of Cancer of the breast.*

Residences. Damp, etc.

We have already referred to Haviland's view—that Cancers particularly flourish in those parts of the country which are low and flat, are covered by alluvium, and are watered by many streams which frequently overflow their banks and flood the surrounding country ; and also to Lloyd Jones', that cancers are most prevalent near large trees. In opposition to Haviland's theory, however, G. Melmoth Scott has shown in an admirable monograph that, in the Chelmsford and Maldon districts (East Essex) there are no fully formed rivers in those districts where the Cancer death rate is highest and that in those parts which lie on the banks of fully formed rivers there is no special prevalence of the disease.

To what extent residence in a particular soil should be held responsible for Cancer of the breast we have been unable to determine, because, as we have explained above, the majority of patients were quite ignorant of the nature of the soil on which they lived, and had, moreover, lived in several districts before the onset of the Cancer. It was, therefore, clearly impossible to come to any conclusion on this point. But we have, instead, made careful inquiries into the perhaps more comprehensive question of damp, situation of house lived in, residence near a river, etc., with the following results—

(A) In 30 per cent. of cases there was a well-marked history of damp in some form or another. (In many of these there was a history of residence near a river or canal, etc.)

(B) In 17 per cent. of cases there was a history of residence near a river or canal, but, with the exception of fogs and occasional mists, no marked history of damp.

(C) In 53 per cent. of cases there was no history of damp either in the house or district, and no residence near a river.

The cases included under Table A may be thus summarized—

In Case No. 7.—One house in London in which patient lived for six months was damp.

One house in Battersea was ten minutes' walk from the river.

In Case No. 14.—All members of the household fell ill in one house which was situated near a river.

One district—East Peckham, near Tonbridge—was always damp.

Three houses were situated close to a river.

In one place the drinking water did not suit patient.

In Case No. 15.—The kitchen in one house was damp for three years.

In Case No. 16.—One house was close to the river Medway, and almost on a level with it.

In one house in which patient lived, but previous to her arrival, the basement of the house, which was on a level with the river, was flooded.

One house was damp and climate of district relaxing.

One house in Northwold, Norfolk, in the Fens, might have been damp.

In Case No. 17.—One house in Southwark, ten minutes' walk from the river, was on one occasion flooded in the basement by the tide.

In Case No. 18.—House in Romney Marsh, Kent, probably damp. Big sewer 22 yards from the house.

Open ditch round back and front of another house in same district.

House at Surbiton dry as a rule, but occasionally flooded.

West Smithfield, house sometimes flooded in the lower part by the street drains.

Blackfriars Road, room damp on account of steam coming into it from an eating house below.

House in Leatherhead, bad ventilation and no light. Close to the river Mole.

In Case No. 23.—House in Westbourne Park was damp, everything went mouldy.

House in Seymour Place was damp downstairs, and smelt badly.

In Case No. 25.—Two houses—five and ten minutes' walk from the river respectively.

One house in Kensington was damp. Patient had constant sore throats there.

In Case No. 26.—In one house in Purves Road, Kensal Rise, in which patient lived, the lower part was damp and mildewed. Patient, however, lived in the upper part of the house.

In this district the soil was clayey and naturally damp.

In Case No. 29.—One house in Berkshire very damp.

Another house at Datchet, near Windsor, low and damp and situated near the river.

In Case No. 30.—A house at Lentwerdine, Herefordshire, on a level with and twenty yards from the Severn. Once or twice a year the house was flooded.

A house at Letton, Herefordshire, was situated slightly above the level of the Wye, and about ten minutes' walk from it. House dry as a rule, but sometimes flooded.

A house at Stockton, Yorkshire, situated low and surrounded by hills—close to a fishing stream—often enveloped in fogs. Climate damp. Patient often had rheumatics there.

In Case No. 32.—A house at Hampton Bishop on the outskirts of Hereford, about 200 yards from the Wye, and on a level with it, was frequently flooded.

In Case No. 37.—House rather damp and very near a river.

In Case No. 39.—House in Alnwick situated low and near a river. Bedroom rather damp.

House in Wigan, Lancashire, situated near a river. Climate rather damp.

House in Minehead. Climate damp.

In Case No. 41.—One house in Abingdon, Berkshire, situated low and one minute's walk from the river.

In one house at Ealing the walls always seemed to be damp.

In Case No. 45.—A house in Victoria Park was damp and low and situated near the canal.

One house in Kennington was damp.

In Case No. 50.—Some rooms in St. John's Wood were over stables and were damp.

Some rooms in Chepstow Place were over stables and were damp.

In Case No. 56.—A house in Derby was low and so damp that patient had to move.

In one house at Aylesbury there was actually water in the kitchen, and when patient went down there she had to put down planks on which to walk, as the water soaked through the floor. In another house at Aylesbury there was always a feeling of damp in the lower rooms. The paper would come off and the boots become mildewed.

In Case No. 61.—In one house in Folkestone the sea water would occasionally permeate the floor of the cellars and cause damp.

One house in Westminster was about twenty yards from the river.

In one house at Camberwell everything went mouldy.

In Case No.68.—A house in Gillingham, Kent, was very old and close to the wharf. It has since been abandoned.

Another house in the same place was close to the river and very damp.

Another house in the same row was also close to the river but less damp.

In Case No. 78.—A house at Gravesend was low and situated near the river. Climate damp.

In Case No. 80.—A house in Walworth was probably rather damp.

A house in Kennington was situated about 20 or 30 yards away from the canal.

Patient during her travels often slept in insufficiently aired sheets.

A room in the City Road in which patient lived had a cistern full of water which supplied the water closet. The room felt close but was not damp.

In Case No. 82.—One room where patient slept in a house in Lincolnshire was damp, as was also the climate. All the fields were surrounded by dykes.

Damp climate at Granthrope and at Conisholme, Lincolnshire.

One house at Wragby, Lincolnshire, was damp all over.

Stoke-by-Clare, Suffolk, bad smell in the village.

Braintree, Essex, walls of house were sometimes quite wet. Many fogs came up from the fields.

In Case No. 83.—One house in Little Queen Street, W.C., was over an oil shop, from which there was a great smell.

The kitchen in a house at Kentish Town was damp.

A house in Queen's Square was damp.

In Case No. 88.—One house in Battersea, which was only twenty yards from the river, was twice flooded by the tide coming into it. Patient always suffered from bad headaches in this house.

In Case No 90.—A house in Stepney was very old and some parts were very damp.

Wickham, where patient lived, is very swampy, and there are great floods there.

In Case No. 91.—The climate at Killeyleigh, Ireland, where patient lived four years, very damp.

House in Mark Lane where patient lived eight years, very damp, and about ten minutes' walk from the river.

House in Highgate also very damp.

In Case No. 92.—A house in Finsbury Park was probably damp in the basement. The middle part of the house, where patient lived, was, however, dry.

In Case No 93.—One house in Kingsland, N., was near the canal.

One house in Finsbury Park was very damp.

In Case No. 95.—One house at Hampstead Heath overlooked the Hampstead Ponds, the water in which, patient thinks, was rather stagnant.

Regarding Haviland's view that residence near a river which overflows its banks is a cause of Cancer (without any reference to the nature of the soil) the facts just quoted tend rather to support it, for out of the thirty cases included under A, it will be observed that there are eighteen in which at one time or another patients had spent a certain part of their lives close to a river; these, together with the seventeen mentioned under B, make thirty-five cases in all. Out of this number, in seven instances the river had overflown its banks, and in some cases it had actually flooded the house to a greater or less extent.

On the other hand, these histories show that there are a great many instances of damp being present, without patients ever having lived near a river or on marshy ground; and as we have already seen, the greater number of patients have not spent all, or indeed the greater part of their lives, in one place only, but in several. It is clear, therefore, that we cannot assign residence in any particular locality as the sole cause of Cancer of the breast. *The evidence before us points rather to the fact that damp in any form may act as a contributary cause.*

Again, a reference to cases Nos. 14, 18, 23, 25, 80, 82, 83, 95, show that defective drainage, residence near stagnant water, living in a room in which there are cisterns, or inhaling impure air, are factors which cannot be neglected, and which may take some considerable share in the production of mammary Cancer.

While, therefore, we think Haviland's view is correct, namely, that residence near a river may be a cause of

Cancer, we think it only partially so, and we are inclined to attach much more importance to the influence of damp generally and defective drainage as causes of Cancer of the breast, than to residence in any particular locality, especially when, as is so often the case, we find associated with these factors one or more of the following —A family history of Consumption—Errors of lactation or Injury.

Diet.

It has been suggested that excessive meat eating may be a cause of Cancer. Roger Williams on this point says: " In this connexion the remarkable sex distribution of Cancer in New Zealand, to which I have previously referred, should be borne in mind. Here more men are affected than women; and this is attributed locally to their gluttonous habits with regard to meat eating." Further on he remarks, " That Cancer is much less prevalent in vegetarian than in flesh-eating communities is generally believed; and the following considerations are favourable to this view. In Ireland, where a large proportion of the population live chiefly on vegetable diet, the prevalence of Cancer, as I have previously pointed out, is much less than in either of the sister countries. The greater prevalence of Cancer in rural than in urban districts, and in the latter its greater prevalence in those localities where the well-to-do and easy-going reside rather than among the poor and working classes, point to the same conclusion." This author, however, admits later on " that vegetarians are not exempt from Cancer, for out of 102 Cancer patients operated on at the Jeypore Hospital during the period of 1880–88, sixty-one were vegetarians, and forty-one meat-eaters." This author is also of opinion that " the greater exemption of savages from Cancer, and its great prevalence in civilized communities, is largely attributable to the influence of diet. At any rate it is certain that savages, as a rule, are less well fed than are members of modern communities."

Now, it is a somewhat difficult matter to determine the amount of meat consumed by patients; but by adopting, for the sake of convenience, an arbitrary standard such as the following, and regarding

(*a*) Those who eat meat twice or three times a day as *large* meat eaters,

(*b*) Those who eat meat once or twice a day as *moderate* meat eaters,

(*c*) Those who eat meat less than once a day as *small* meat eaters,

we may form an idea of the amount consumed, sufficiently accurate for our purpose. Of the *large* meat eaters there were thirteen. Of this number, not more than two took meat to excess. Of the *moderate* meat eaters there were seventy-one. Of the *small* meat eaters sixteen. These facts are, we think, sufficient to show that we cannot regard an excessive consumption of meat as a common cause of Cancer of the breast, and we very much question whether we should regard it in that light at all.

Australian Meat. Canterbury Lamb.

It has been suggested that it is to the consumption of Australian meat, or Canterbury lamb, that we must look for the cause of the increase in the number of cases of Cancer in this country, but as Soltau Fenwick, op. cit. page 97, has pointed out: "The comparative immunity enjoyed by the native population of Australia and Argentina and the uniform increase of the disease in all parts of the civilized world are sufficient to negative the supposition."

In 43 per cent. of our breast cases we found that patients had *occasionally* taken Australian meat, or Canterbury lamb, or both; but of this number, in only twelve cases had the meat been consumed for any lengthened period.

In one case, Australian meat and tinned meat had been taken off and on for a period of fifteen years; in two cases, Australian meat only, for a period of about ten years; in the remaining ten cases, for a period of about one year.

This evidence is not sufficiently strong to support the view that meat from these countries takes any share whatever in production of Cancer of the breast.

Fish.

Our statistics show that women who have Cancer of the breast are not great fish eaters. Indeed, in only 5 per cent. of cases have we found that fish was eaten as often as once a day. On an average it is taken about once a week. Patients say they usually eat it fresh, but whether this is actually the case or not may well be open to doubt. In eleven cases, fresh fish was taken at one time, salted fish at another. There seems to be no reason why we should look upon fish eating as in any way a cause of Cancer of the breast.

Salt, Excess of.

Braithwaite, *Lancet*, December 7, 1901, page 1578, is of opinion that excess of salt taken into the system, aided possibly by other factors, such as insufficient oxidation of the food and irritation, is a cause of Cancer. He argues as follows:—Cancer is less common among Jews than with us. Bacon and ham are absent from their diet. Cancer is common in those nations which eat bacon and ham. The pig is the only domestic animal in which Cancer is met with. It must therefore be the salt and not the flesh of the animal which is to blame. He says, "Nothing can be clearer about Cancer than the fact that its incidence is connected with diet; and if our various pieces of knowledge bearing upon diet are compared, it will be found that the only constantly present thing is salt."

Roger Williams, *Lancet*, January 25, 1902, page 260, contests the statement that Jews are less prone to Cancer than other people.

R. D'Oyly Noble, *Lancet*, January 25, 1902, page 261, suggests that it is the unclean ham and bacon, and not the salt, which is the cause of Cancer.

The amount of salt taken is even more difficult to estimate than the amount of meat consumed, for in addition to what is eaten with the meals, a certain amount is generally used for cooking purposes. The amounts given in the Histories and Abstracts can only be regarded therefore as approximately correct. As being a convenient, though perhaps somewhat arbitrary standard, we may consider the daily consumption of a teaspoonful of salt as being about the normal amount, and anything above that as " excessive."

It is only fair to Braithwaite's theory to mention that in six cases, " excess " of salt as thus defined was taken—the brief details of which are as follows :—

In Case No. 4, the patient ate salt " heavily," and took about a tablespoonful daily.

In Case No. 27, the patient took about three teaspoonfuls daily.

In Case No. 33, the patient took from one and a half to three teaspoonfuls daily.

In Case No. 72, the patient took about two teaspoonfuls daily.

In Case No. 74, the patient took about one and a half teaspoonfuls daily.

In Case No. 82, the patient took about one and a half teaspoonfuls daily.

We have also noticed under the previous heading that salted fish was taken by eleven patients more or less habitually. In spite of these facts we may say that we see no more reason to regard " excess " of salt as a cause of Cancer than eating bread and butter, or indeed any other ordinary article of diet.

Uncooked Vegetables.

Plimmer, in the *British Medical Journal*, December 12, 1903, page 1511, says that Behla, who lived for a great many years in Luckau, was of opinion that many of the cases of Cancer occurring in various parts of the houses and suburbs there, were due to infection, caused by the inhabitants washing their vegetables, many of which

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were eaten raw, in the foul and stagnant water of a ditch which encircled the central part of the town. Plimmer also mentions the case of a very distinguished pathologist who for the same reason gave up eating salad more than ten years ago. Out of the ninety cases in which we made special inquiries into this point, we found that eighty-nine patients had at one time or another taken one or more kinds of uncooked vegetables. What interpretation we ought to put on these facts it is extremely difficult to say, but as the eating of uncooked vegetables is an extremely common practice amongst the community generally, we cannot well attribute the onset of Cancer to this cause alone.

Alcohol.

On the relation of Alcohol to the production of Cancer, Walshe wrote: "The action of spirituous liquors indulged in persistently and to excess may be considered somewhat allied to that of irritant poisons, and numerous authors assert that the disease is frequently induced in the stomach by the habit of drunkenness. But no proofs are given of this assertion, and it is contradicted by the fact that although stomachs of persons dying with *delirium tremens* occasionally present the anatomical characters of chronic gastritis, the disposition of Cancer has not been noticed under the circumstances. Besides, how trifling is the proportion of sufferers from gastric Cancer to that of the habitual drunkards; and how came it that it is not much less frequent in the sex almost exempt from *delirium tremens* than among males?"

W. Soltau Fenwick, op. cit. page 98, writes: "Although, therefore, it is possible that the abuse of stimulants may so diminish the natural resistance of the tissues as to favour the inception of Cancer, as it undoubtedly does that of tubercle, we do not believe that it is in any way an important factor."

Again, Roger Williams op. cit. page 288, remarks: "The ensemble of the facts relating to the life history of mammary Cancer patients shows that they have almost invariably led regular, sober, and industrious lives. Persons of drunken and dissolute habits are comparatively seldom affected."

Our own conclusions on this point are in exact harmony with those just mentioned, for we only found in 3 and possibly 4 per cent. instances in which too much alcohol had been habitually indulged in, thus :—

In Case No. 52, the patient admitted she took too much at times.

In Case No. 63, the patient admitted that " constant nipping " was her failure.

In Case No. 59, the patient was in the habit of taking about six tablespoonfuls of whisky daily.

In Case No. 81, though the patient assured us she took only a pint of mild ale per diem, and two tablespoonfuls of gin or whisky in the course of a week, yet her appearance was suggestive of alcoholic habits.

A reference to the Histories or Abstracts will show that in no case except those just mentioned has an unreasonable amount of alcohol been indulged in, and in many cases the amount habitually drunk has been very small.

General Health, Occupation, etc.

(A) In 61 per cent. the general health was good.

(B) In 29 per cent. the general health was bad or indifferent.

Cancer of the Breast is therefore more than twice as frequent amongst those whose previous health has been good as in those in whom the reverse is the case. We may observe that under the heading B there are six cases which may be taken as showing a possible tendency to consumption, if not in some instances actual consumption itself, thus :—

In case No. 15, the patient suffered at times from sickness, and attended the Brompton Hospital for a cough. She never vomited, however, or coughed up blood.

In case No. 46, the patient had pleurisy nine times, and pain in the pit of her stomach lasting sometimes six weeks. (tubercle ?—tubercular ulcer ?)

In case No. 48, the patient had suffered from a bad cough since girlhood.

In case No. 56, the patient had a "lump under her right jaw and lumps" in the groin. (Enlarged tubercular glands ?)

In case No. 62, the patient was always "delicate looking," and had been told by her doctors that they thought it "probable she would go into consumption."

In case No. 74, when young, the patient suffered from a dry cough and pains in her chest and was treated at the Brompton Hospital for consumption. She used to bring up blood, but this ceased after treatment.

As examples of other previous ailments and illnesses coming under the heading of B, we may instance the following :—(*a*) Patient always weak—has had rheumatism, dropsy and gout ; (*b*) Patient always ailing as a girl ; (*c*) General health never good—she has had a winter cough, and has always been weak in the chest : has had influenza and anæmia ; (*d*) Anæmia and stricture of cervical canal ; (*e*) Patient always ailing ; (*f*) Patient had typhoid ; (*g*) Patient had diphtheria. (*h*) Patient had jaundice ; (*i*) Patient was delicate and had chorea ; (*j*) Displacement of the uterus present ; (*k*) Patient delicate, has had asthma and bronchitis ; (*l*) Patient had some kind of fits ; (*m*) Patient had pleurisy, influenza and chronic endometritis ; (*n*) Patient had congestion of the lungs and influenza ; (*o*) Patient had an enlarged thyroid and ulcerated throat ; (*p*) Patient had headaches, rheumatic fever and neuralgia.

We must again insist on the fact that the majority of cases of Cancer of the breast occur in those whose general health has been perfectly good, but amongst those in whom it has been bad or indifferent, it seems that there is a somewhat undue proportion who show a tendency to consumption.

Occupation.

The occupations followed were as follows :—

Service (including housemaid, parlourmaid, "general," and cook, etc.), together with household duties	22	cases
Service *only*	8	,,
Trade of some kind *only*	2	,,
Household duties *only*	25	,,
Household duties and trade of some kind other than service	33	,,
Service, Household duties and Trade . .	6	,,
Service and Trade	3	,,
Philanthropic work	1	,,
	100	,,

The various trades were as follows :—(1) Dressmaking and bookbinding. (2) Help as a general dealer in a chemist's shop. (3) Bookseller's assistant. (4) Draper's assistant. (5) Work in a baker's shop. (6) Teacher. (7) Artificial flower making and work in a confectioner's shop. (8) Milliner. (9) Silk winding. (10) Superintendent of a boarding house. (11) Farm work. (12) Work in a public house. (13) Handsewing. (14) Nursing. (15) Coffee house keeper. (16) Perfumery business. (17) Envelope folding. (18) Tailoring. (19) Nursery governess. (20) Cotton winder and Barmaid. (21) Dressmaker. (22) Saleswoman. (23) Dyer and laundry work. (24) Confectioner.

The trades followed are of so varied a kind that we cannot regard any of them as being a special cause of Cancer; but whatever the occupation of the patient may have been, whether she has simply performed her household duties, been out in service, or followed some definite trade—there is, in 11 per cent. of cases, this one feature in common (*vide* Histories, Nos. 15, 20, 36, 53, 66, 70, 77, 83, 86, 93, 95) viz., a history of lifting heavy weights, moving heavy articles of furniture ; or a strain of some kind has been experienced, such as moving or helping to move a more or less helpless person, etc. We cannot therefore help looking upon undue strain of all kinds as a likely cause of Cancer of the breast, and that such is not an unreasonable view to take is shown by the fact that "recurrences" after removal of the breast are sometimes observed almost immediately after the occurrence of a strain, or after the too vigorous use of the arm of the side operated upon. In case No. 12, there was a history of a great deal of exposure to heat in a bakery. Prolonged and constant exposure to heat may, we believe, be a cause of Cancer of the breast in the same way as it produces an epithelioma in the natives of Kashmir.

Syphilis.

In no single case were we able to find any signs of syphilis. It would seem therefore that we cannot regard this as in any way a cause of Cancer of the breast.

Cancer, Infection with.

In 31 per cent. of cases, there is a history of a *possible* infection of Cancer, but that such was the cause of the Cancer of the breast seems, in the majority of cases at any rate to be doubtful, though we cannot absolutely deny its possibility. It is quite probable that the infectivity of Cancer generally differs greatly, and depends not only upon the situation of the Cancer, but also on the presence or absence of a foul or offensive discharge. In several of our cases there is a definite history of patients having come in contact with cases of Cancer with a foul or offensive discharge. W. Gifford Nash, *Lancet*, November 14, 1903, page 1356, has reported some cases which seem to show that epithelioma of the lip may be caused by drinking out of the same vessel as that used by those afflicted by Cancer. But in these cases it is almost impossible to decide how far such facts go to favour the view that Cancer is caused by infection, and *in* 68 *per cent. of this series of Mammary Cancer there is no history of even a possible infection.* In order to be in a position to form his own views on this important subject, the reader is referred to cases Nos. 1, 4, 8, 17, 25, 32, 33, 36, 37, 45, 50, 55, 59, 62, 63, 65, 66, 67, 69, 70, 72, 74, 82, 85, 86, 90, 92, 93, 95, 96, 100, where the full details are given.

Tubercle, Infection with.

In 12 per cent. there was a history of a possible infection with tubercle. Here again, whether an infection actually took place or not it is impossible to decide, but infection with tubercle was much more likely to have taken place than was infection with Cancer, because in the former case, in all instances except one, the husband was the person who had consumption, and therefore the wife must have been exposed to the risk of infection on many occasions, whereas in the latter case in only one instance was the husband the person from whom infection might have been conveyed, and in all cases except this one, the occasions on which infection with Cancer could have taken place were, when compared with infection with tubercle, few and far between. If infection with tubercle really does take place, the resisting powers of the mammary cells become so quickly lowered that the slightest injury, irritation or "insult," may lead to the development of Cancer, and the symptoms of tubercle then become masked by the more rapid and exclusive development of the latter malady. We must then regard all possible sources of infection with tubercle as possible sources of Cancer of the breast. The following are the cases in which Infection with the Tubercle may have taken place: Nos. 7, 16, 18, 19, 40, 46, 47, 50, 68, 80, 90, 99.

"Cancer Houses."

Under this heading we have only included those cases where there is a history of residence or brief stay in a house formerly inhabited by a patient affected with Cancer, *and where the possibility of direct infection could be completely excluded.* It will be observed that in many of the cases mentioned under the heading of "Possibility of Infection with Cancer," there was a definite history of visits to, or residence in, the same house as a Cancer patient, but such were not considered under the heading of "Cancer Houses" because the possibility of direct infection could not be negatived.

Throughout this series there are only two instances in which the onset of the Cancer could possibly be ascribed to residence in a so-called " Cancer House."

These cases are No. 18, where the patient in 1893, on about fifty occasions rested in a room formerly occupied by a butcher who in 1891 died of a growth which was possibly Cancer ; and case No. 57, where a patient for three years occupied the same bedroom as a former wife who died of Cancer of the breast.

While, therefore, in only 2 per cent. of the cases can we find any support whatever for the existence of the so-called " Cancer Houses," in 32 per cent. of cases, as we have already seen, an infection with Cancer may have taken place. The evidence then that Cancer of the breast may be caused by infection far outweighs that in favour of it being due to residence in a " Cancer House."

We have now considered the various clinical causes of Cancer of the breast, and the accompanying Table shows the relative frequency with which these causes are found. *It will be observed that the four factors most constantly present are*—(*a*) *Errors of Lactation ;* (*b*) *Family History of Consumption ;* (*c*) *Injury ;* and (*d*) *Worry and Anxiety. We must therefore regard these as the four most common causes of Cancer of the breast.*

To what extent any *one* cause is capable by itself of originating the growth is a somewhat difficult matter to decide, but that it may be capable of doing so is shown by the fact that in a few cases only one cause was present. We must conclude that Cancer of the breast is almost invariably due to a *combination of causes.*

The clinical facts contained in these histories will, we think, convince us of the uselessness of attempting to find *one* cause or formulate *one* theory for the origin of Cancer of the breast which will be applicable to all cases. If therefore this is impossible for Cancer in one region, it is obvious that the attempt to find a single cause for the occurrence of the disease in all the different localities of the body must *a fortiori* be more futile still.

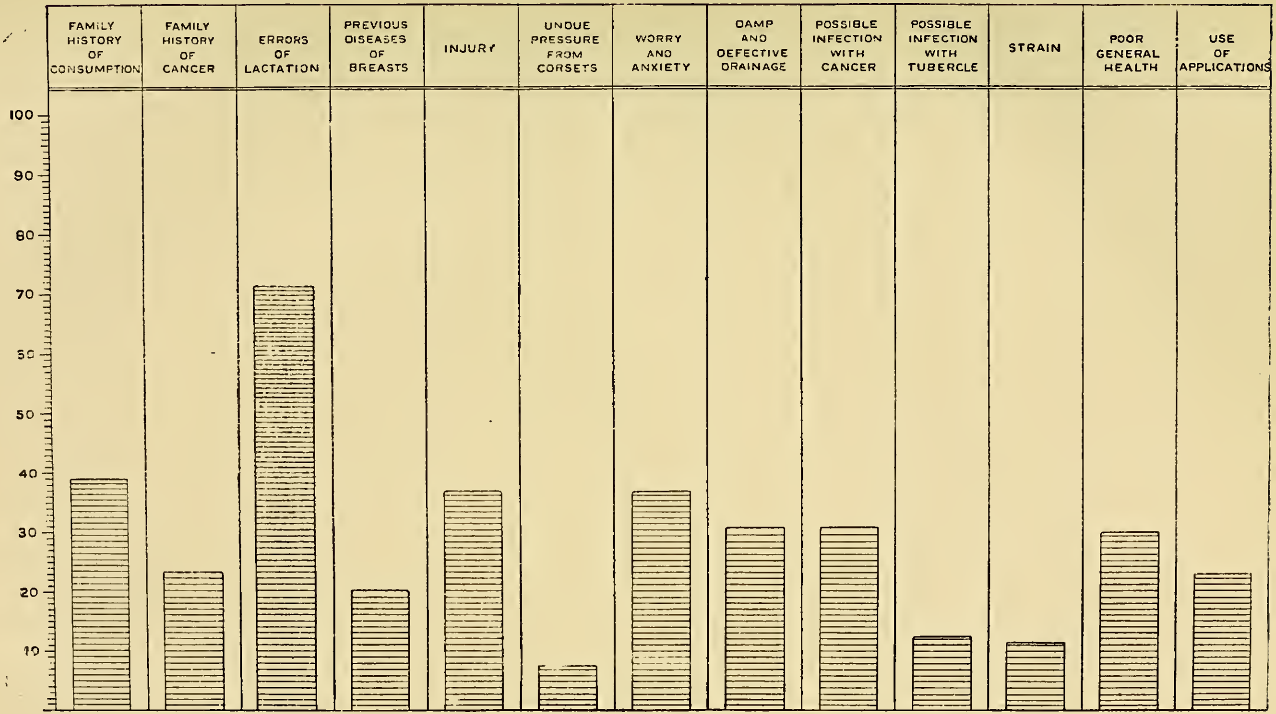

TABLE SHOWING RELATIVE FREQUENCY OF PROBABLE CAUSES OF CANCER OF THE BREAST.

Prevention of Cancer of the Breast

IF the above conclusions are accepted, then the measures to be taken to prevent the development of Cancer of the breast are so apparent, and so readily suggest themselves, that it will be useless to spend a great deal of time in their consideration.

Avoidance of damp in those who have a tendency to, or a family history of, Consumption.

Though it is undoubtedly the case, as we have already seen, that the majority of women with Cancer of the breast have themselves enjoyed good health, on the other hand, in 39 per cent. of cases there is a family history of Consumption, and in 29 per cent. the previous general health has been bad.

It is precisely in such cases as these that women should take more than usual precautions regarding their general health ; they should avoid living in damp houses or localities, and it is most important they should satisfy themselves that their drainage is not defective. If married they must not fall into those "Errors of Lactation," to which we have already referred in the previous chapter. It is especially in such cases that an "insult" to the breasts, which in a perfectly healthy woman with a good family history, may be followed by no ill consequence, is in them apt to lead to the development of Cancer.

Early Marriages.

Early marriages, and the consequent stimulation of the mammary cells before they are properly developed, should be discouraged.

Confinements.

In order to give the mammary cells a sufficient period of rest after each lactation period, it is absolutely necessary *that a reasonable time, say at least two years, should be allowed between each successive pregnancy.* A woman who, owing to her poor state of health, is unable, and never likely to be able to secrete a sufficient quantity of milk, should be warned that the risk she runs of developing Cancer of the Breast is materially increased each time she becomes pregnant. *Such women, and women with a strong family history of consumption, or women with any condition of the nipples which renders suckling impossible, are in our opinion better unmarried.*

Management of the Lactation Periods.

Provided a woman can secrete a sufficient quantity of milk, and it is of the proper quality, she should be encouraged to suckle. *She should be warned of the possible danger to herself, on the one hand from refusing to suckle, and on the other, from protracting the Lactation period.* Whenever a proper quantity of milk is secreted, and it is of the proper quality, and the breasts and nipples are perfectly healthy, mothers should be encouraged to suckle equally from both breasts. They should not discontinue or diminish suckling from the one breast, simply because the child happens to lie more comfortably when put to the other. In fact, wherever it is possible, suckling should be carried out from both breasts, and at regular intervals. We need hardly say that the greatest care should be taken to keep the nipples scrupulously clean. Each time the child is taken away from the breasts, they should be gently washed with a little warm water which has been boiled, then carefully dried, and afterwards covered over with sterilized gauze. Cracks, fissures and ulcerations of the nipple, which so frequently arise during the lactation period, and which are sometimes the precursors of Cancer, may thus be entirely prevented.

Applications, Avoidance of.

No preparation, or liquid, of the kind to which we have already alluded, and which is so often recommended by interested relatives or ignorant midwives, should ever be rubbed into the breasts, with the view of drying up the milk, or indeed for any purpose whatever.

As a rule, when the child is weaned the milk disappears of itself, but if this should take too long, it may be withdrawn by gentle pressure, or by means of a breast pump. Should circumstances arise which make it necessary to check the secretion of milk, a belladonna plaster may be used.

Previous Diseases of the Breast.

We have already referred to the fact that in 20 per cent. of cases there was some previous disease of the breast unconnected with lactation. Sore, ulcerated, and split nipples must be treated on ordinary principles, but if the condition persists in spite of treatment we must remember that it may develop into malignant disease, especially if pregnancy supervenes. *Similarly, depressed or small nipples, and, in fact, any condition which renders suckling difficult or impossible, are potential sources of Cancer.* Unmarried women with this condition may suffer no harm and should be advised to remain single, and married patients should certainly be cautioned against becoming pregnant. Should they become so, the secretion of milk should be checked at once by the application of a belladonna plaster. With each recurring pregnancy the possibility of Cancer developing is materially increased.

As Paget's disease so frequently develops into carcinoma, women who are affected in this way should submit to early amputation of the Breast; it is better to have this done immediately, or even before the actual growth has made its appearance rather than later, because the earlier the operation, the less chance of recurrence; moreover, little is gained by retaining an organ which is unable to perform its functions and which necessarily causes the patient much mental worry and anxiety.

Avoidance of Injury and Strain.

It is most important that injuries of all kinds should be prevented. If women could only be convinced that an injury to the breast frequently means a Cancer, they would, we feel sure, be able to prevent the development of Cancer in this organ to a very great extent. A great deal might be done in this direction by wearing breast protectors instead of corsets. These should be made of some light but resistant material, and fitted and so adjusted to each patient, that they could be worn without discomfort, and without the possibility of slipping. Whatever view we may hold of the share taken by injury in producing Cancer of the breast, that is, whether we regard it as an actual or predisposing cause only, the fact remains that in 35 per cent. of our cases there was a history of injury, and in thirty-two of these the Cancer developed in the same side as the injury. *Hence the necessity for wearing efficient protectors, and so of avoiding injuries, cannot be too strongly enforced, especially for those who are exposed to unusual risks.*

Strain, whether in lifting heavy weights or in moving heavy articles of furniture, must be avoided, as it undoubtedly takes some share in the production of Cancer.

Infection with Cancer and with Tubercle.

Though, as we have seen, we cannot prove that Cancer of the breast develops as a result of infection from a previous case, yet in view of the possibility of this occurring, it is clearly wise to take every precaution. While, therefore, we may allay women's natural dread as to Cancer being a contagious disease, on the other hand it is well to warn them against coming in contact with cases of Cancer, especially those attended with a foul or offensive discharge, unless absolutely compelled to do so. If they are compelled to do so we must urge on them the necessity of taking every means of thoroughly disinfecting themselves.

As we have also seen, there are good grounds for supposing that an infection with tubercle may be an indirect cause of the development of Cancer; the usual precautions for guarding against such a possibility must be strictly enforced.

"*Cancer Houses.*"

Though the evidence in favour of Cancer of the breast developing as a result of residence in a so-called "Cancer House," is shown in this series of cases to be extremely meagre, yet in the event of a person going to occupy a room or live in a house in which a patient has lived who has had Cancer, it is advisable to take exactly the same precautions as we should do in the case of one of the specific fevers. Thus, the walls should be stripped, all bedding and linen destroyed, and the room in which the patient has lived should be disinfected for a whole day by means of a lamp such as the Alformant Lamp A, which is capable of generating formic aldehyde. We have already mentioned that there are reasons for regarding damp in any form, whether in a district or house, and also defective drainage, as contributory causes of Cancer. No woman should therefore live in a house which is liable to be flooded from a river, or which is situated on habitually moist or marshy ground. Neither should she live in a house any of the rooms of which are damp; she should particularly avoid living or sleeping in any room in which there are large cisterns. She should not reside in places where the climate is damp, or where mists or fogs are prevalent.

Diet, Spirits, etc.

We consider there are no sufficient grounds for warning patients against eating meat, Australian meat fish or uncooked vegetables, though of course it is always advisable to see that the latter are properly washed. Neither is there any adequate reason why patients should not take as much salt as they like. Beer and spirits may also be taken in moderation without the slightest risk being run of thereby developing Cancer.

The Wearing of Corsets.

Though we cannot regard the wearing of *suitable* corsets as in any way responsible for the development of Cancer of the breast, on the other hand we cannot deny that the wearing of *badly made or ill-fitting* corsets may in a small percentage of cases take some share in its production.

There are two chief drawbacks to the corsets as at present worn. In the first place, they do not reach sufficiently low down to "give support" where it is most needed, namely to the abdominal viscera; and secondly, they reach so high up, so that they tend to interfere with free respiration; moreover, the "bones" which give them the necessary stiffness are apt to injuriously compress the breasts. We venture to make the following suggestions. In the first place, no girl should wear corsets until she has finished growing, and not then unless for some special reason. She does not require them, and she can develop much better without them than with them, especially if she goes in for athletics or some kind of physical exercise. On the other hand, the majority of women over thirty, women who have borne many children, and whose abdominal walls are becoming lax, may require some kind of support, but it is an abdominal support, a support which will tend to raise the abdominal viscera which they require, and one which will not interfere with the respiration. The corsets which answer this purpose best are the straight-fronted corsets of French design. Being very long, back and front, they give efficient and comfortable support to the abdominal viscera, and owing to their not reaching so high as the English patterns, they are not so apt to injure the breasts, while at the same time the lungs are allowed free play.

Again, women should never buy ready-made corsets; they should always be measured and fitted for them. It is especially in those cases where the corsets are too large or too small, or do not fit quite accurately, that the greatest amount of harm may be done.

Occupation.

Any occupation which involves much straining or lifting should be avoided, especially in those cases where the general health is poor or there is a tendency to, or a family history of, consumption.

In conclusion, we may say that if women would only recognize the fact that Cancer of the breast is almost invariably due, not to one cause only, which baffles our search, but to a combination of causes, which are perfectly intelligible, and could be induced to adopt those measures which are here recommended, we believe that more than 90 per cent. of the cases could be entirely prevented.

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